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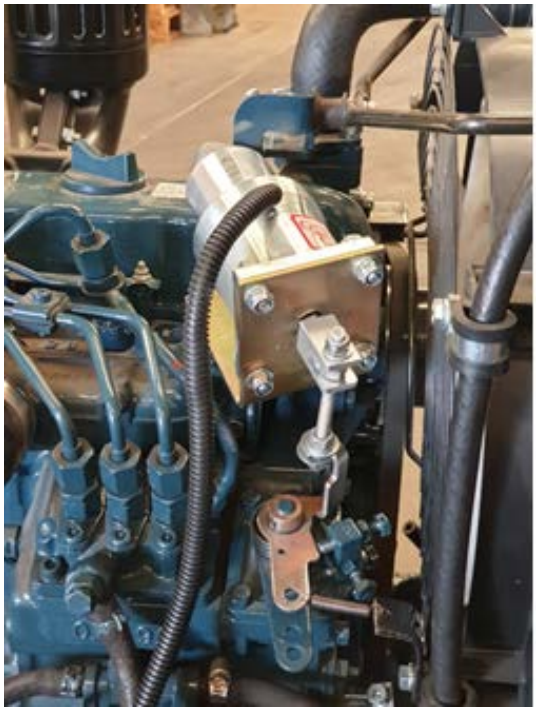
GAC APPLICATION NOTE

Document Title:	**D722 ENGINES**
Customer / OEM:	Kubota
Application(s):	Variable DC Gen Drive
Engine Make / Model / Displacement / Rating:	Kubota D722 Diesel 0.719 L, 3 Cylinder, 14.9 kW (20.0 HP) at 3600 RPM, 12V
Equipment Make / Model:	Mecc Alte Generator Drive
Fuel System Type & Make / Model:	Diesel
Operating Speed(s):	14.9 kW @ 3600 RPM
Battery Voltage:	12V
Installed or Recommended Products:	**ALTERNATOR** (MECC ALTE) : PM5G 48VDC **ACTUATOR** (GAC): ALN025 with BK265 and KT130 clevis kit **SPEED CONTROLLER** (GAC): EEG7000

Summary / Details / Notes:

Combining a Mecc Alte PMG with a GAC actuator and speed controller, the team developed a variable speed generator solution that varies the generator's engine speed based on load. This solution can optimize and match the output power with demand significantly reducing fuel consumption and waste: >25% minimum from a fixed speed application. This application was used to charge a battery bank while maintaining Voltage and maximizing the battery life.



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MECC ALTE PERMANENT MAGNET ALTERNATORS (PMG)

The Mecc Alte Permanent Magnet Generator is available in DC & AC. Extremely compact & lightweight, it can be utilized in-conjunction with inverters. This style of alternator is ideally suited to supply an inverter as the PMG system virtually eliminates transient Voltage spikes, due to the fact that it is not externally excited. It has a built-in EMC filter. Harmonic Distortion is very low at <2%, giving superior waveform, guaranteeing the safe operation of modern sensitive electronic equipment.

- Rare Earth Magnets
- Available from 3KW through to 25KW
- DC Fixed/ Variable speed
- AC Variable Speed & MeccAlte inverter
- Filtration capacitor fitted, very low ripple <1% (DC Variant)
- Multiple RPM Versions available on request
- Multi-Pole
- 3PH Windings
- No Bearings
- IP 23
- Efficiency Approx 90%,
- Ideal for battery charging / lighting towers /AC or DC gensets
- **https://www.meccalte.com/en/products/alternators/zanardi-products/pmg**

GAC TOWERS

GAC's ALN linear actuators provide highly accurate precise positioning for closed-loop control with a minimum number of moving parts, prolonging the life of the actuator. With no sliding parts and sealed, reliability is outstanding, and no maintenance is necessary. The ALN is a proportional solenoid actuator where the output shaft position varies proportionally with current strength. An integral return spring provides a fail-safe feature, setting the output shaft to the zero fuel position when power is turned off.

- Low Cost, Compact Design
- Fast Response, Precise Repeatability
- Completely self-contained, Maintenance Free
- Integral return spring returns output shaft to zero fuel position if battery power is lost
- Operates in any position, not gravity sensitive
- Compatible with GAC's standard speed control units
- Requires only a firm mounting surface, appropriate linkage to the fuel control and electrical connection to the speed control unit

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GAC EEG7000 ENHANCED ELECTRONIC DIGITAL SPEED CONTROLLER

GAC's EEG7000 electronic digital speed controller is designed to regulate engine speed on diesel and gaseous fueled engines. The GAConfig Tool adds the ability to monitor and set parameters from your PC. With CAN J1939 capability, it can accept TSC1 messages over USB as a mini engine control module (ECM). It can be controlled directly over J1939 with aftermarket displays – a solution for every application.

- Mini-ECU, J1939 TSC1 Control Capable with Diagnostic Messages (DM)
- Isochronous, Variable, or Customizable Droop Governing
- 3 Fixed Speeds or Variable Speed with Direct 0-5 V, 5k Ω, or 4-20 mA Input
- Built-in USB Port for Easy Configuration with Free Software
- Black-Smoke Reduction, Speed Ramp Control, Load Sharing / Synchronizing Option, and Cummins EFC Capable
- Built-in Speed Switch Output for Crank or Overspeed
- Engine Hour Meter and Service Timer
- Fully Sealed, IP-67

ACCESSORIES

Part Number	Description	
EC1502	EEG7000: 14 Pin AMPSEAL Mating Connector	
CH1520	EEG7000: Cable Harness Assembly